

West Nile Virus Summary, Michigan 2002

West Nile virus (WNV) activity was first detected in Michigan in 2002 in a dead crow from Wayne County that was confirmed to be infected with WNV on 5/24/2002. Testing of dead corvids (crows, blue jays, and ravens) was conducted from May-October. Bird testing ended October 31, 2002 with 73 of 83 Michigan counties in both the Upper and Lower Peninsula having WNV positive birds detected. In addition to birds, there were 341 confirmed cases of WNV in horses in 45 counties in both the Upper and Lower Peninsula of Michigan. WNV is now considered to be endemic to the state.

Limited mosquito surveillance revealed 58 positive mosquito pools in 7 of 9 counties surveyed in the Lower Peninsula of Michigan. The counties with positive mosquito pools identified were Wayne, Oakland, Macomb, Ingham, Saginaw, Tuscola, and Midland. The majority of these were *Culex* species, the most common mosquito in Michigan to be associated with WNV transmission. A positive *Coquillettidia perturbans* pool was detected for the first time in the state in 2002. This species may be important as a potential bridge vector as it bites both birds and mammals.

In 2002, Michigan as well as other Great Lakes states experienced the first documented cases of WNV in humans in this region. The first 2 cases in Michigan were reported on August 16, 2002. Although transmission of WNV ended with the first hard frost in mid-October, laboratory testing of samples continued into November and December. The Michigan Department of Community Health Laboratory received over 2900 specimens for WNV testing in 2002. Of these, there were a total of 644 laboratory positive specimens. These specimens fall into 2 categories of results-confirmed and probable. Probable cases represent illnesses that are likely to be due to WNV, but information was not adequate to confirm them.

Most people (80%) who are exposed to WNV through a mosquito bite have an inapparent infection, meaning they have no symptoms of illness, and they develop immunity to future infection. Twenty percent of people bitten by an infected mosquito will develop a mild form of illness called West Nile fever. Symptoms are fever, headache, body and joint aches, and may also include fatigue, swollen lymph nodes, and rash. In 2002, Michigan had 57 cases of WN fever identified by the MDCH laboratory. It is very likely that this represents a small number of the people who may have had WN fever, as people with mild illness may not have sought treatment. There is no specific treatment for viral illnesses such as West Nile.

Less than 1 in 100 people bitten by an infected mosquito will develop a more serious form of illness. These include cases of meningitis and encephalitis. Symptoms of WNV meningitis/encephalitis include fever, headache, and stiff neck or altered mental status, as well as other neurologic manifestations. Cases of WNV meningitis/encephalitis are reportable conditions on a State and National level. In 2002, Michigan had 559 cases of WNV meningitis/encephalitis that were identified through testing at the MDCH laboratory. In many cases, people with WNV meningitis/encephalitis are hospitalized. In some individuals, this type of illness can result in death. The elderly and immunocompromised individuals (those with cancer undergoing chemotherapy, on steroids, or with AIDS, for example) have a higher risk of death as a result of a WNV infection. The Michigan Department of Community Health has identified 51 deaths in Michigan to date that are attributable to WNV infection. A total of 28 laboratory positive cases could not be investigated further due to lack of information.

In addition to WNV, other insect-borne viruses that can cause encephalitis in humans do occur sporadically in Michigan. They include St. Louis encephalitis virus (SLE), Eastern Equine encephalitis virus (EEE), La Crosse encephalitis virus (LAC), and Powassan virus. SLE, EEE, and LAC are mosquito-borne viruses, while Powassan is tick-borne. Human cases of all of these other insect-borne viruses were identified in Michigan in 2002. There were a total of 21 of these illnesses reported from 12 different counties. These include 3 cases of SLE, 6 cases of EEE, 11 cases of LAC and 1 case of Powassan virus. The case of Powassan virus is important because it is the first time this illness has been diagnosed in a citizen of Michigan. This patient became infected from the bite of a tick in the northern Lower Peninsula in the spring of 2002. Many of these cases likely would not have been identified were it not for the intense testing for WNV virus that occurred in patients with meningitis or encephalitis in 2002.

Michigan had a total of 28 counties with human cases of West Nile virus in 2002. Three of these counties had West Nile fever cases only. Together, surveillance efforts in birds, horses, mosquitoes, and humans revealed evidence of West Nile virus activity in 75 of Michigan's 83 counties.

West Nile Virus Case Summary

Total Laboratory Positive Cases: 644

West Nile Meningo-encephalitis cases: 559

Age range: .75-95 yrs

Average age: 57.8 yrs

West Nile Fever cases: 57

Age range: 3-80 yrs

Average Age: 47.7 yrs

Unknown cases: 28

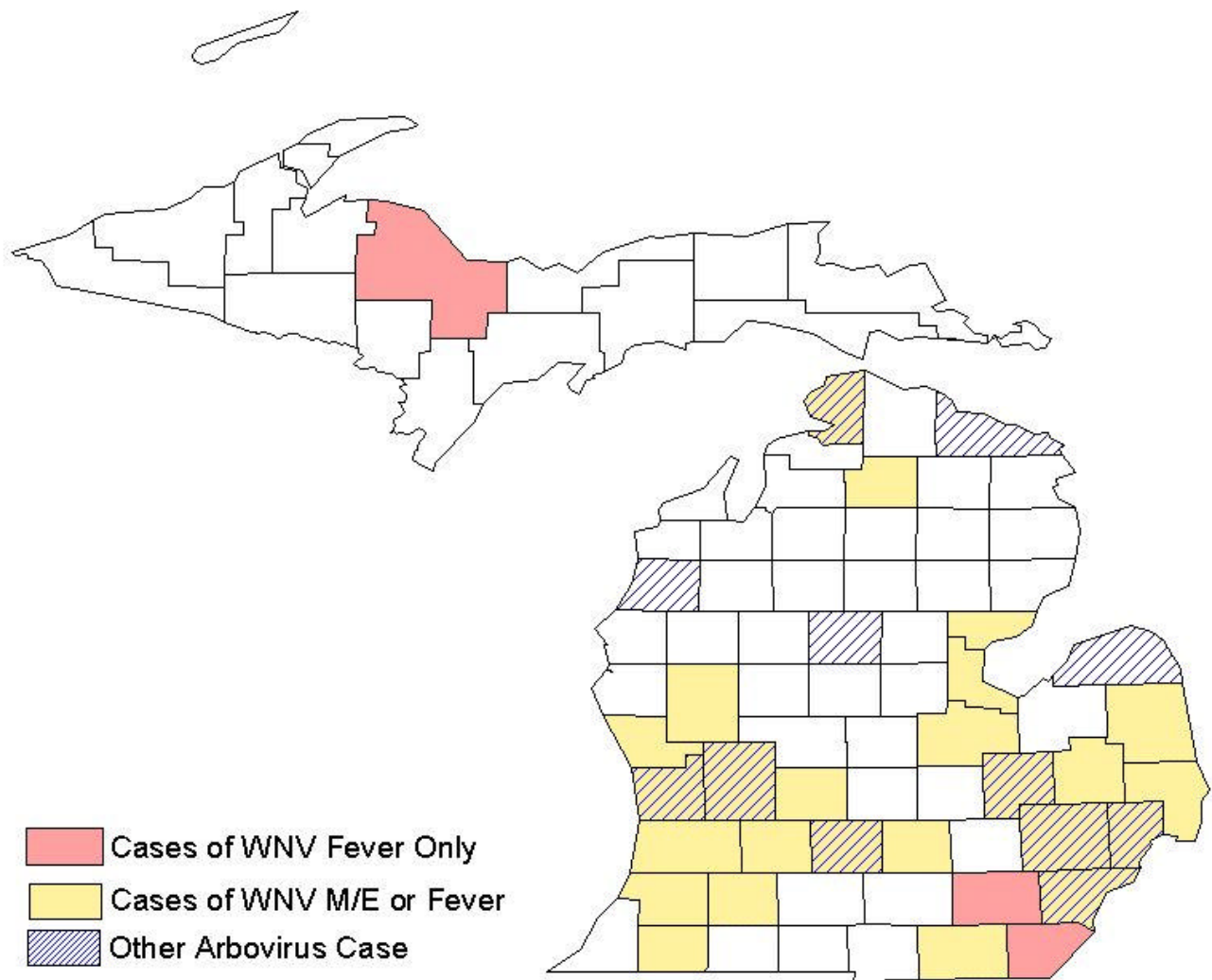
Deaths: 51

Age range: 24-95 yrs

Average age: 74.5 yrs

The following map and chart summarize the surveillance activity for human cases of WNV and other arboviruses in 2002.

West Nile Virus and Other Arbovirus Cases in Michigan, 2002



County	WNV M/E	WNV Fever	WNV Unknown	SLE	EEE	La Crosse	Powassan	Total
Allegan	1	0	0	0	0	0	0	1
Arenac	1	0	0	0	0	0	0	1
Barry	1	0	0	0	0	0	0	1
Bay	1	1	0	0	0	0	0	2
Cass	3	1	0	0	0	0	0	4
Clare	0	0	0	0	0	1	0	1
Eaton	1	0	0	0	0	1	0	2
Emmet	1	0	0	0	0	0	1	2
Genesee	1	0	0	0	0	3	0	4
Huron	0	0	0	1	0	0	0	1
Ingham	7	0	1	0	0	0	0	8
Ionia	1	2	0	0	0	0	0	3
Kalamazoo	3	0	0	0	0	0	0	3
Kent	54	6	0	0	0	1	0	61
Lapeer	1	0	0	0	0	0	0	1
Lenawee	2	0	0	0	0	0	0	2
Macomb	99	9	4	0	2	1	0	115
Manistee	0	0	0	0	0	1	0	1
Marquette	0	1	0	0	0	0	0	1
Monroe	0	1	0	0	0	0	0	1
Muskegon	1	0	0	0	0	0	0	1
Newaygo	2	0	0	0	0	0	0	2
Oakland	183	26	5	0	1	2	0	217
Otsego	1	0	0	0	0	0	0	1
Ottawa	10	2	0	0	1	0	0	13
Presque Isle	0	0	0	0	0	1	0	1
Saginaw	2	0	0	0	0	0	0	2
Sanilac	1	0	0	0	0	0	0	1
St. Clair	1	0	0	0	0	0	0	1
Van Buren	3	0	0	0	0	0	0	3
Washtenaw	0	1	0	0	0	0	0	1
Wayne	178	7	18	2	2	0	0	207
Total	559	57	28	3	6	11	1	665